

# PJD16N08A

## 75V N-Channel MOSFET

**Voltage**

**75 V**

**Current**

**16 A**

### Features

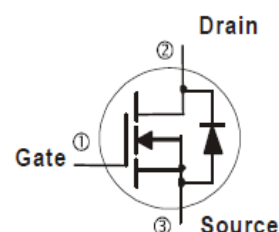
- $R_{DS(ON)}$ ,  $V_{GS}@10V, I_D@8A < 65m\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}@4.5V, I_D@2A < 80m\Omega$
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

### Mechanical Data

- Case : TO-252 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0104 ounces, 0.297grams



TO-252



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                        |                         | SYMBOL          | LIMIT    | UNITS              |
|--------------------------------------------------|-------------------------|-----------------|----------|--------------------|
| Drain-Source Voltage                             |                         | $V_{DS}$        | 75       | V                  |
| Gate-Source Voltage                              |                         | $V_{GS}$        | $\pm 20$ | V                  |
| Continuous Drain Current                         | $T_C=25^\circ\text{C}$  | $I_D$           | 16       | A                  |
|                                                  | $T_C=100^\circ\text{C}$ |                 | 10       |                    |
| Pulsed Drain Current (Note 1)                    | $T_C=25^\circ\text{C}$  | $I_{DM}$        | 64       |                    |
| Power Dissipation                                | $T_C=25^\circ\text{C}$  | $P_D$           | 41.6     | W                  |
|                                                  | $T_C=100^\circ\text{C}$ |                 | 17       |                    |
| Continuous Drain Current                         | $T_A=25^\circ\text{C}$  | $I_D$           | 3.5      | A                  |
|                                                  | $T_A=70^\circ\text{C}$  |                 | 2.8      | A                  |
| Power Dissipation                                | $T_A=25^\circ\text{C}$  | $P_D$           | 2.0      | W                  |
| Power Dissipation                                | $T_A=70^\circ\text{C}$  |                 | 1.3      |                    |
| Single Pulse Avalanche Energy (Note 6)           |                         | $E_{AS}$        | 15       | mJ                 |
| Operating Junction and Storage Temperature Range |                         | $T_J, T_{STG}$  | -55~150  | $^\circ\text{C}$   |
| Typical Thermal resistance (Note 4,5)            | Junction to Case        | $R_{\theta JC}$ | 3        | $^\circ\text{C/W}$ |
|                                                  | Junction to Ambient     | $R_{\theta JA}$ | 62.5     |                    |

- Limited only By Maximum Junction Temperature



# PJD16N08A

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                             | SYMBOL              | TEST CONDITION                                                                              | MIN. | TYP. | MAX. | UNITS |
|-------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------|------|------|------|-------|
| Static                                                |                     |                                                                                             |      |      |      |       |
| Drain-Source Breakdown Voltage                        | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA                                                  | 75   | -    | -    | V     |
| Gate Threshold Voltage                                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA                                    | 1.0  | 1.73 | 2.5  | V     |
| Drain-Source On-State Resistance                      | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =8A                                                    | -    | 50   | 65   | mΩ    |
|                                                       |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =2A                                                   | -    | 55   | 80   |       |
| Zero Gate Voltage Drain Current                       | I <sub>DSS</sub>    | V <sub>DS</sub> =70V, V <sub>GS</sub> =0V                                                   | -    | -    | 1.0  | uA    |
| Gate-Source Leakage Current                           | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                                  | -    | -    | ±100 | nA    |
| Dynamic (Note 7)                                      |                     |                                                                                             |      |      |      |       |
| Total Gate Charge                                     | Q <sub>g</sub>      | V <sub>DS</sub> =37.5V, I <sub>D</sub> =8A,<br>V <sub>GS</sub> =10V (Note 2,3)              | -    | 13.8 | -    | nC    |
| Gate-Source Charge                                    | Q <sub>gs</sub>     |                                                                                             | -    | 2.1  | -    |       |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     |                                                                                             | -    | 2.7  | -    |       |
| Input Capacitance                                     | C <sub>iss</sub>    | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V,<br>f=1.0MHZ                                      | -    | 637  | -    | pF    |
| Output Capacitance                                    | C <sub>oss</sub>    |                                                                                             | -    | 67   | -    |       |
| Reverse Transfer Capacitance                          | C <sub>rss</sub>    |                                                                                             | -    | 24   | -    |       |
| Turn-On Delay Time                                    | td <sub>(on)</sub>  | V <sub>DS</sub> =37.5V, RL=7.5Ω,<br>V <sub>GEN</sub> =10V, R <sub>G</sub> =3Ω<br>(Note 2,3) | -    | 6.2  | -    | ns    |
| Turn-On Rise Time                                     | t <sub>r</sub>      |                                                                                             | -    | 27   | -    |       |
| Turn-Off Delay Time                                   | td <sub>(off)</sub> |                                                                                             | -    | 15   | -    |       |
| Turn-Off Fall Time                                    | t <sub>f</sub>      |                                                                                             | -    | 7.5  | -    |       |
| Drain-Source Diode                                    |                     |                                                                                             |      |      |      |       |
| Maximum Continuous Drain-Source Diode Forward Current | I <sub>S</sub>      | ---                                                                                         | -    | -    | 16   | A     |
| Diode Forward Voltage                                 | V <sub>SD</sub>     | I <sub>S</sub> =1A, V <sub>GS</sub> =0V                                                     | -    | 0.8  | 1.0  | V     |

### NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics
3. Repetitive rating, pulse width limited by junction temperature T<sub>J</sub>(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub> = 25°C.
4. The maximum current rating is package limited
5. R<sub>θJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch<sup>2</sup> with 2oz.square pad of copper.
6. The test condition is L=0.1mH, I<sub>AS</sub>=17.3A, V<sub>DD</sub>=25V, V<sub>GS</sub>=10V
7. Guaranteed by design, not subject to production testing

# PJD16N08A

## TYPICAL CHARACTERISTIC CURVES

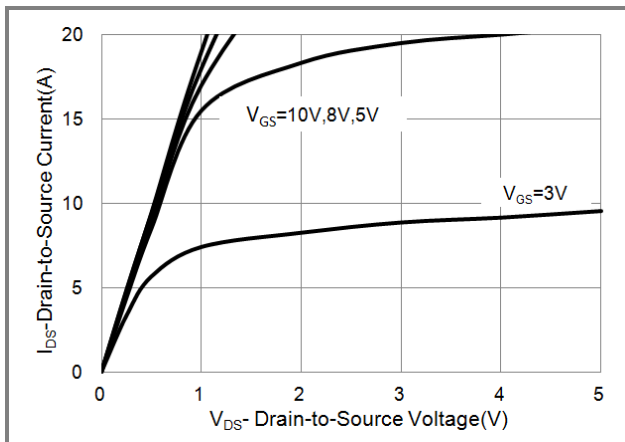


Fig.1 Output Characteristics

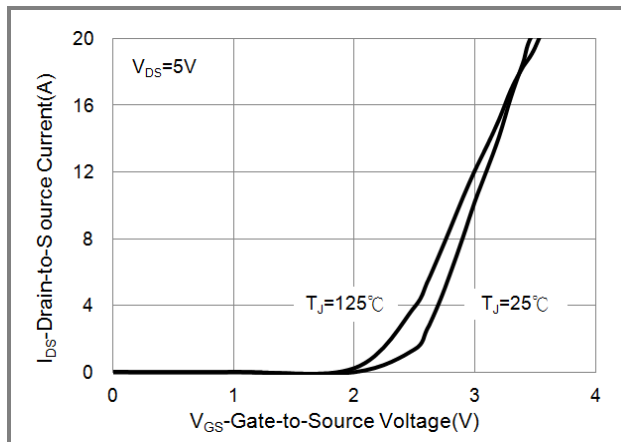


Fig.2 Transfer Characteristics

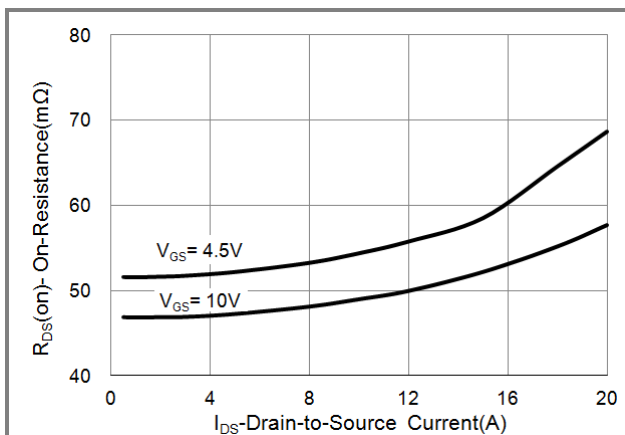


Fig.3 On-Resistance vs. Drain Current

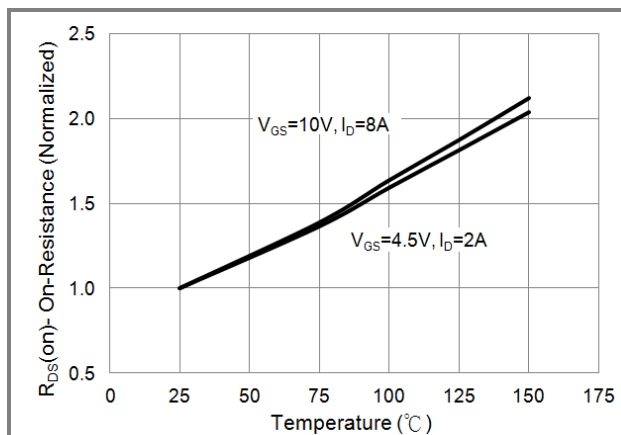


Fig.4 On-Resistance vs. Junction temperature

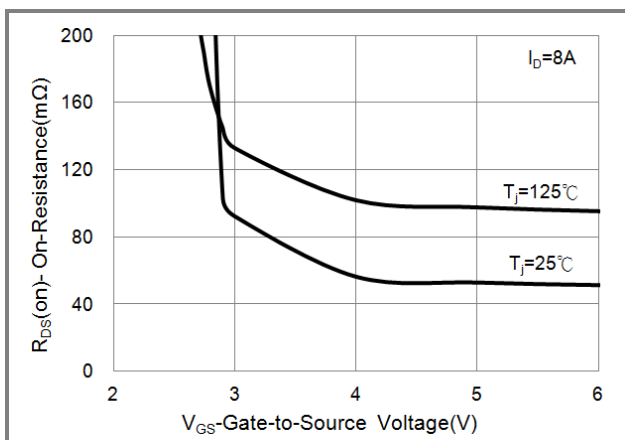


Fig.5 On-Resistance Variation with  $V_{GS}$ .

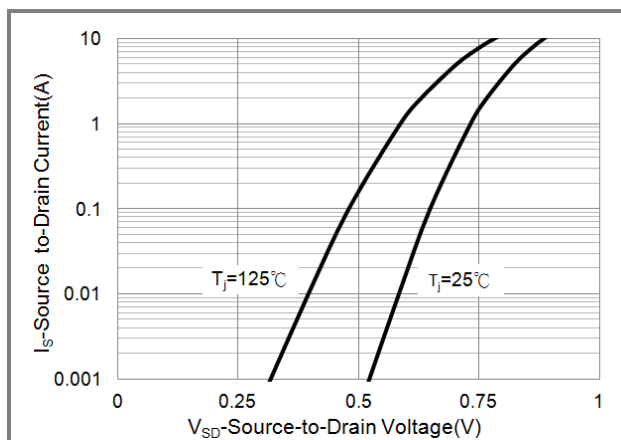


Fig.6 Source-Drain Diode Forward Voltage

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## TYPICAL CHARACTERISTIC CURVES

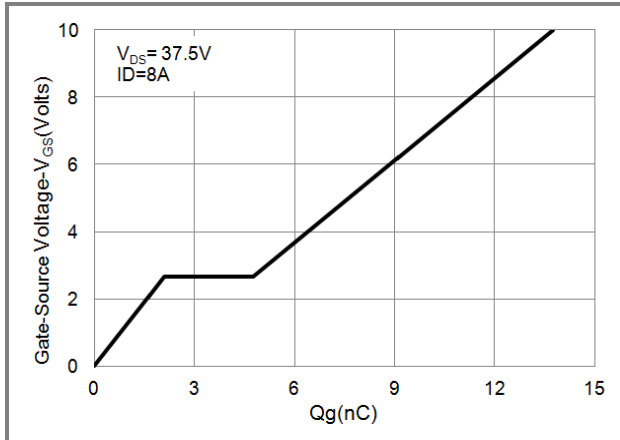


Fig.7 Gate-Charge Characteristics

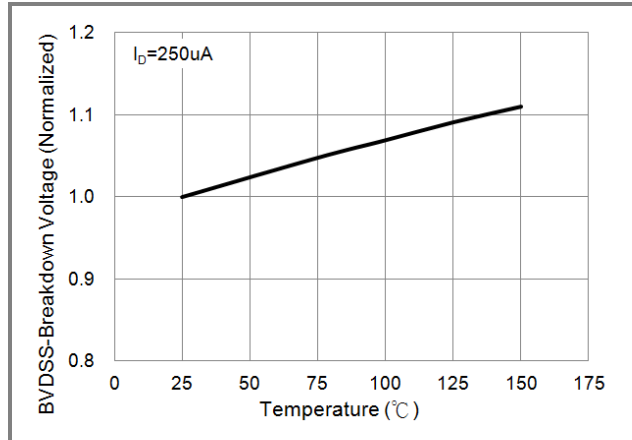


Fig.8 Breakdown Voltage Variation vs. Temperature

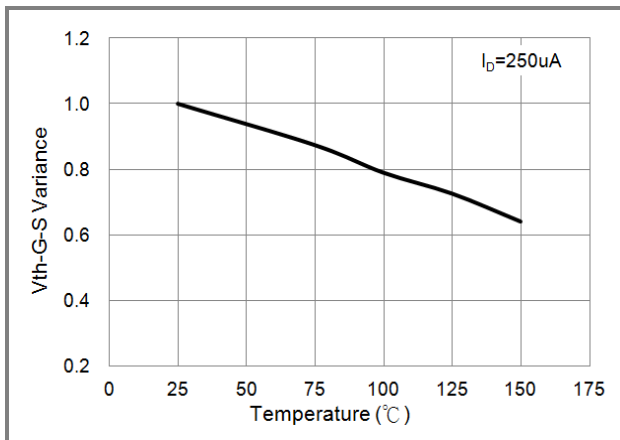


Fig.9 Threshold Voltage Variation with Temperature

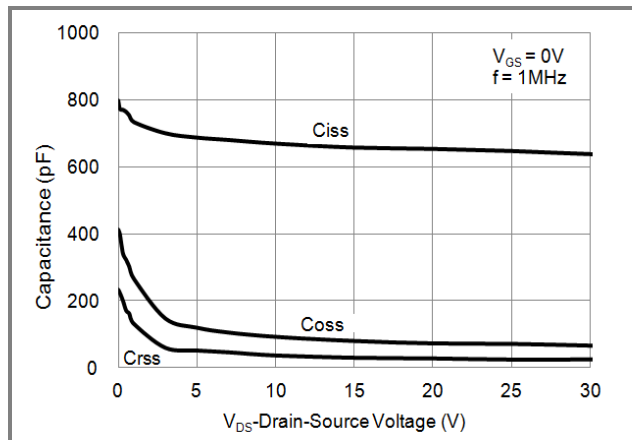


Fig.10 Capacitance vs. Drain-Source Voltage

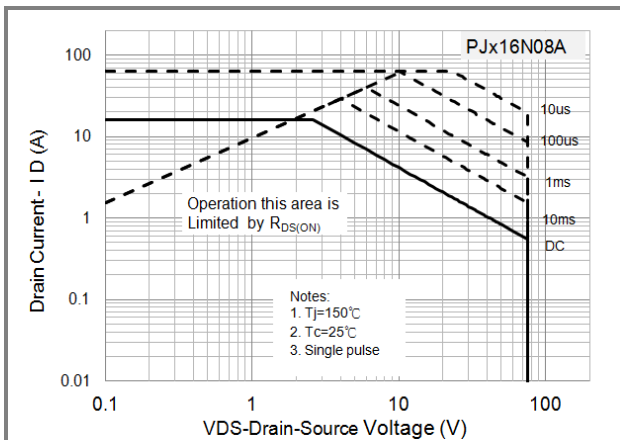


Fig.11 Maximum Safe Operating Area



## PJD16N08A

### TYPICAL CHARACTERISTIC CURVES

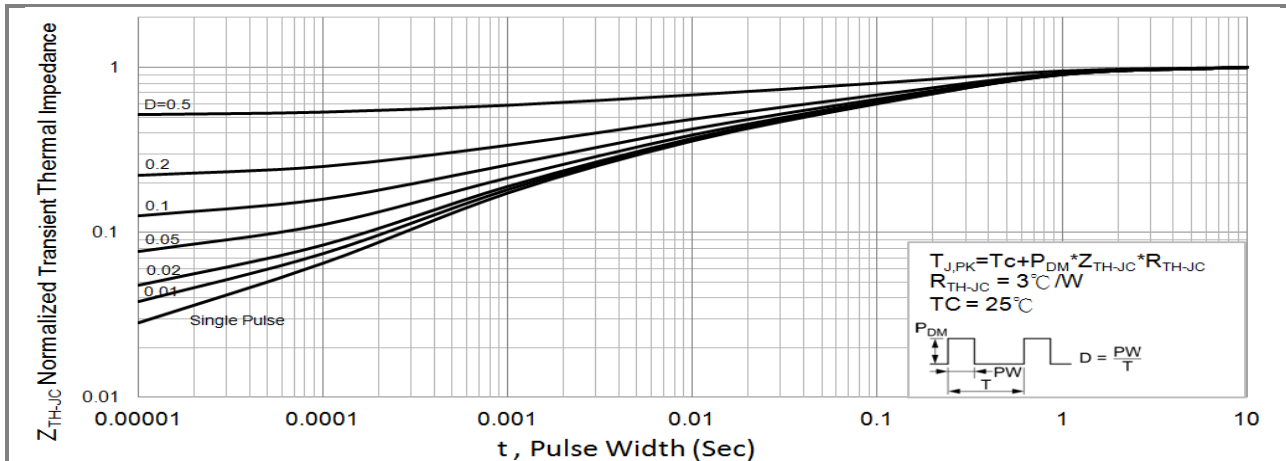
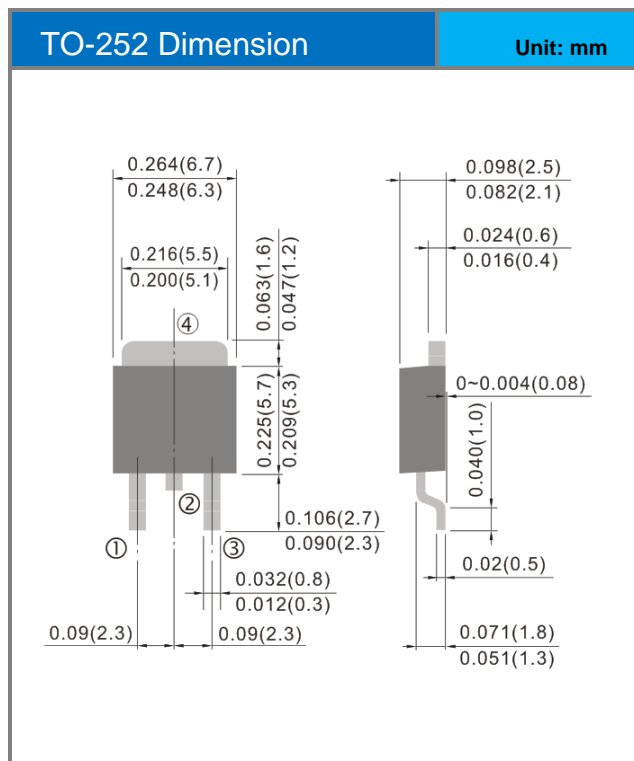


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width

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## Packaging Information

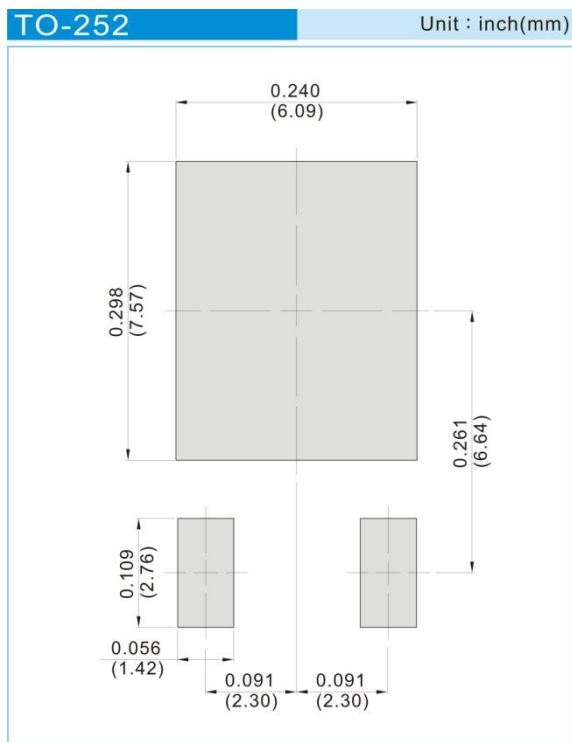


# PJD16N08A

## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing type        | Marking | Version      |
|----------------------|--------------|---------------------|---------|--------------|
| PJD16N08A_L2_00001   | TO-252       | 3,000pcs / 13" reel | D16N08A | Halogen free |

## MOUNTING PAD LAYOUT





## PJD16N08A

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